The Nature of Communication in Virtual Home Care Visits

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The study's objective was to analyze "virtual" home care visits that utilize telemedicine technology and to investigate the type and quality of interaction between provider and patient. The setting was the TeleHomeCare Project which provides TV-based videoconferencing. Patients are receiving standard home care services with an addition of virtual visits. 122 virtual visits were reviewed and a content analysis was performed for 30 of these. Time was apportioned among the following categories of communication: assessing the patient's clinical status, promoting compliance, addressing psychosocial issues, general informal talk, education, administrative issues, technical issues, assessing patient satisfaction and ensuring accessibility. The findings indicate that technology does not interfere with but rather enriches the care process. Although there are activities that cannot be conducted in virtual visits, they can address most of the important aspects of care delivery giving strength to the argument that they could in some cases substitute traditional visits.

Introduction

Telemedicine is viewed as a method of health care delivery that could address issues of cost as well as problematic access to home care both for rural and urban under-served patients. It has the potential to use technology to decrease travel time and costs for nurses and increase the number of patients a home health care (HHC) nurse visits in a given day. Telemedicine in home care, also known as telehomecare (THC), uses telecommunications and videoconferencing technologies to enable a health care provider at the clinical site to communicate with patients at their home. Such an interaction is called a "virtual visit." In this context, the term "actual visit" is used to describe the traditional visit of the health care provider to the patient's home.

Several studies have investigated outcomes of telehomecare with respect to its cost-effectiveness[1,2], effect on medication compliance[2], ability for self-care[2], and patient satisfaction[2,3,4]. However, no studies have attempted to address the comparability of actual and virtual visits. This is an important question both from a clinical and policy perspective since the primary utility of virtual visits for a home health care agency lies in its ability to make more efficient use of the provider's time by substituting virtual for actual visits. In order for substitution to be justified, it must be determined that the process of conducting virtual visits is similar to actual visits and that they lead to similar or improved clinical outcomes. There is some evidence by Johnson et al that virtual visits produce medical outcomes similar to the ones of traditional home care[2]. However, this study focuses on the process rather than the outcome. Specifically. it examines whether technical problems arise that could adversely affect the interaction with the patient and whether the verbal interaction between the patient and the provider is similar to what would be expected in a face-to-face interaction.

Methods

The virtual visits analyzed for this study were selected from the TeleHomeCare Project at the University of Minnesota[5]. This project utilizes low-cost commercially available videoconferencing and Internet access to enable the interaction between home care patients and nurses. This project includes one urban and three rural home care agencies in Minnesota and focuses on patients with chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF) and those requiring wound care (WC). Patients assigned to the experimental group of the project receive two virtual visits per week in addition to the actual home care visits specified in the treatment plan approved by their physician. All subjects sign an informed consent form approved by the University of Minnesota Institutional Review Board prior to participation in the study.

The nurse initiates a virtual visit by calling the patient at his/her home. The modular videophone used for this project is the VC55 ViaTV Modular Videophone (8x8, Inc., Santa Cruz, CA) that combines with any standard video camera (with built-in microphone), a touch-tone telephone and a television set to form an integrated videoconferencing system. The patient answers the phone, turns on the television and waits for the connection to be established. As soon as the nurse can be seen on the television, the patient can start interacting without having to use the phone receiver, although some patients prefer to hold it while speaking. Nurses videotaped the virtual visits using the "split-screen" feature that allows the appearance of two windows on the screen (one showing the patient's site and the other the HHC agency site). Thus when reviewing the tapes, one can observe both sites.

An instrument for assessing the technical quality of a virtual visit was developed as an objective tool for reporting technical problems that could interfere with the care delivery process.

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A selected set of all taped visits was reviewed. The study of these tapes revealed that both sites (patient's home and nurse's site) could experience difficulties with sound (interruptions or variations in volume), picture (interruptions or poor quality) or equipment failure. These difficulties were usually resolved, thus enabling the virtual visit to proceed. However, in some cases the severity of the problem resulted in the termination of the virtual visit. Finally, the connection could be interrupted without the nurse being able to specify what might have caused it. Questions addressing these problems were included in the instrument.

The form records patient identification, date, starting and ending time of the visit and the initials of the participating nurse and was completed after each virtual visit. It contains five items regarding the technical quality of the visit. The first three items refer to the observations made by the nurse in regard to the frequency of difficulties with the technology experienced at the central site (audio, image or other). The next two items address problems with video and sound at the patient's home. The last item addresses possible disconnection(s) and their frequency. This form assigns a score for the technical quality to each visit. A visit with no technical errors or difficulties would be assigned the maximum score of 35. As difficulties are noted, the score is reduced with the degree of reduction for each problem depends on its frequency. The lowest score is 0 and describes a virtual visit where the visit had to be terminated due to audio and image problems and the connection could not be established again. The technical index is calculated as the percentage of the highest achievable score.

In order to evaluate the reliability of these technical ratings, the first author (GD) observed and rated each taped virtual visit that had also been rated by the nurse conducting the visit.

Three virtual visits per patient were randomly selected for extensive review, thus providing a total of 30 virtual visits for the content analysis. This was a convenience sample that covered all project sites (rural and urban) and patients of all disease groups. The first author (GD) reviewed each of the virtual visits, identified, recorded and timed all verbal units as well as identified the person stating it (nurse, patient, home aide or other). The basic unit of observation was any articulation (sentence or clause) made by any of the involved parties (nurse, patient, home aid, relative, etc.). The source and target party were identified for every articulation in the interaction.

Content analysis procedures were used to describe, analyze and summarize patterns observed in the "virtual encounter" between a nurse and a home care patient. The first step was to develop a thematic code. An initial set of themes was developed and the review a number of virtual visits conducted during the TeleHomeCare project's pilot study. The group of categories or themes of interaction were then refined while viewing the sampled virtual visits. For every visit, every utterance was classified using this coding scheme. Once the final list of categories was set, an independent, trained judge reviewed a random sample of 10 virtual visits to verify reliability in coding decisions.

In order to obtain greater insight into nurses' perceptions of virtual visits and how they compared to virtual visits, a focus group with three home care nurses was conducted via videoconferencing. Participants were nurses who have been conducting both actual and virtual visits. They were interviewed in a 45 minute discussion based on a set of open-ended questions that referred to a typical actual visit, its themes, issues and tasks and their as well as the patients' style of communication in actual and virtual visits.

Results

A total of 122 videotaped virtual visits were reviewed. These involved ten patients and ten nurses from one urban and three rural home care agencies. Six of these patients were admitted to home care with a primary diagnosis of congestive heart failure (CHF), three with chronic obstructive pulmonary disease (COPD) and one with diabetic related wound care. All but one patient lived in rural areas. Five patients were male and five female. The wound care patient had virtual interactions with only one nurse, whereas for all other patients more than one nurse had conducted virtual visits with them while they were in home care.

The average age of the patients was 77.8 years (SD 11.94 years). The average duration of a virtual visit was 20.53 minutes (SD 7.31 minutes) with the shortest virtual visit lasting 5 minutes and the longest lasting one hour. The average technical quality was 94.75% (SD 7.97%) with a range from 57.1% to 100%.

122 virtual visits were reviewed and a content analysis was performed for 30 of these. Time was apportioned among the following categories of communication: assessing the patient's clinical status (40.85%), promoting compliance (13.16%), addressing psychosocial issues (10.48%), general informal talk, (8.60%), education (8.49%), administrative issues (6.21%), technical issues (5.93%), assessing patient satisfaction (3.48%) and ensuring accessibility (2.79%). Time elapsed since start of care was positively correlated with the amount of time spent on psychosocial issues and negatively correlated with time spent on patient education.

Discussion

The major finding of this study is that the virtual visits that were examined included most of the important patterns of interaction that one would expect in an actual visit. The measurements and observations of technical quality demonstrate that the majority of virtual visits can take place without technology interfering or equipment failing. The fact that nurses do not associate the technical quality with the clinical usefulness of the visit indicates that the factor of technology alone ceases to be sufficient for a virtual visit to be beneficial or detrimental, and that clinical standards that apply to actual visits and determine their usefulness can be applied to virtual ones as well. Furthermore the relatively small percentage of time devoted to technical matters indicates that technical problems do not appear to seriously interfere with the provider – patient interactions in a virtual visit.

Although there are several activities that cannot be conducted by the nurse in a virtual visit (e.g., change of wound dressing, inspection of home environment), this form of interaction covers many relevant aspects of home care delivery and enables the care provider to assess the patient's medical condition, educate and reinforce compliance as well as discuss personal matters. The themes that emerged from the content analysis of virtual visits coincide with Vivian's description of the patterns of a typical interaction between a HHC nurse and a patient[6]. Obviously, assessing the patient's medical status is one of the major purposes of a home care visit and was the dominant component in the observed virtual visits. Patient education, defined as a key factor of home care[7,8], played a major role.
Home health practice manuals[8,9] emphasize the role of promotion of compliance (for medication, nutrition, etc.) in home care and were evident. Time was spent assessing the patient's satisfaction with the telehomecare system since it is still an innovative mode of care delivery. The amount of time dealing with technical issues is minimal.

Psychosocial issues were emphasized in the virtual visits. A number of studies and reports[7,10,11,12] point out the importance of addressing the emotional and intellectual well-being of the patient with "small-talk" and discussion of psychosocial issues that are of concern to the patient. An important component of this communication takes place when patients or even providers disclose details about their family life, cultural background and "other revelations about the self and personal identity[13]." According to Parrott et al.[13], experienced care providers often use the patient's talk about such matters as family and culture as a framework to determine what the patient knows, how to communicate at the patient's level and ways of expressing empathy. Such conversations can reveal far more than that however, as care providers learn to listen for and invite patients' revelations about how their culture or environment influence their health behavior. By displaying empathy and engaging patients in discussing matters of importance to them, a care provider can lower patient anxiety, increase compliance and achieve higher levels of patient satisfaction even in a virtual visit[14].

As discussed earlier, nurses felt that most visits would not have been significantly better if performed in person. The majority of visits were also rated as useful for taking care of the patient. These statements imply that nurses perceive telehomecare as a useful way of providing care and monitoring their patients.

Although virtual visits cannot in general replace actual visits because of limitations in patient assessment methods, we would argue based on the results of this study and those of Johnson et al[2] that evidence is mounting that virtual visits can be a supplement to and in certain cases substitute for routine home care visits where the main purpose is to observe and monitor the patient's condition. They also give strength to the argument that generally a mixture of actual and virtual visits does not compromise the quality of home care. However, the suitability of virtual visits should be determined for each patient based on their condition, level of care required and other relevant clinical factors.

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